



## UTILIZATION OF DIGITAL RESOURCES FOR 21ST CENTURY RESEARCH ACTIVITIES IN PUBLIC UNIVERSITIES IN RIVERS STATE, NIGERIA

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### Abstract:

The study investigated the utilization of digital resources for 21<sup>st</sup> century research activities in public Universities in Rivers State. Three research questions and three related hypotheses were formulated to guide the study. Descriptive survey design was adopted for the study. Population of the study was 2,734 academic staff in the three public Universities in Rivers State. The sample for the study was 610 comprising 325 male academic staff and 285 female academic staff selected through systematic random sampling technique. The minimum sample size used for the study was estimated using Taro Yamane minimum sample size determination technique. The instrument used for collection of data was a 21-item questionnaire titled "Digital Resources for University Research Activities Questionnaire" (DRURAQ). The DRURAQ was face and content validated by two Educational Management Experts in the Faculty of Education, University of Port Harcourt. Cronbach alpha statistic was used to determine the reliability of the questionnaire with a co-efficient of 0.79. The research questions were answered using percentage, mean and standard deviation while the hypotheses were tested using z-test at 0.05 level of significance. The findings of the study revealed that there was a high extent to which statistical data base is used for research activities while e-books were utilized to a low extent in public Universities in Rivers State. It was recommended among others that academic staff should be given stipends to regularly subscribe to e-book sites that are relevant to the research activities of staff of these Universities.

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## 1. Introduction

One of the prime responsibilities of the University is to carry out quality research work that will contribute to growth and development of the society. This is in addition to other functions such as teaching, learning and community development. Research activities from the University are of great importance because they contribute to the growth and development of the local and international community. This may explain why educational stakeholders within and outside the country contribute heavily to research activities in the University system. Research focuses on investigating prevailing societal problems and proffering solutions to improve the standard and quality of life. Fawoel, Egbokhare, Itiola, Odejide and Olayinka as cited in Nwakpa (2015:45) asserted that *“research as a systematic investigation including development, testing and evaluation, designed to develop or to contribute to generalizable knowledge”*. Taylor (2018) further identified the relevance of University research to include; promoting economic competitiveness, development of new knowledge and formulation of new policies among others.

Technology makes task accomplishment easier and faster where manual effort will not be very productive (Whitelaw, Mamas, Topol & Van-Spall, 2020). In this era of technological development, there are various digital resources which have been developed for teaching, learning and research activities in Universities. Mwantimwa (2017) defined digital resources as any resources in a digitized form and can only be accessed through a computer. Providing further explanation, Padmamma (2016) quipped that digital resources refer to materials that can be read through electronic media such as database, journals, books, research reports and other documents that can be accessed through a computer. Digital resources are often provided in the library department of most Universities as they provide opportunity for academic staff as well as other University users to access electronic or digital resources that can be used to promote research activities as well as learning.

The need for digital resources for research activities in the 21<sup>st</sup> century is an issue that cannot be overemphasized. The failure to utilize digital resources for research activities deprive most educational institutions of new research knowledge around the world which can be used to solve local problems (Anyim, 2018; Edem, & Egbe, 2016). Universities that fail to provide digital resources for research will also find it difficult to compare research findings around the work. This explains why Universities whether public or private must invest properly in the provision, development and utilization of digital resources for research activities.

Promoting research through access to digital resources often depend on the time spent by most academics in the use of these resources. However, the time spent by students, teachers and researchers differ and this contributes to the variations in the relevance of digital resources for research purpose across Universities, Faculties and even Department in the same Universities. It is therefore important for University's to

encourage staff and students to utilize available digital resources to promote research outcomes across all levels.

Statistical databases form one of the important digital resources provided in most Universities for research purpose. Students and staff of the University require statistical data base for the purpose of collecting, collating and analyzing research data. Similarly, statistical database also makes it easy for researchers to report research findings and make them useful to end users. Researchers also use available statistical database to compare research outcomes which helps in the development of quality research findings which can impact positively on the society.

There are also electronic books (e-books) which can be accessed by researchers from the University's library for carrying out research activities. Researchers can access available e-books to collect basic information that can serve as basis for future research activities. Similarly, researchers who utilize available e-books from the library also find them useful for the purpose of collecting instant information which can be verified at anytime. This provides easy and storable information for researchers.

The use of the internet is also gaining great attention in most Universities as a useful digital resource that can be used to promote research activities. The internet does not only provide wide range of access to research tools but also makes it easy for researchers to carry out collaborative research for the benefit of the human race. Researchers therefore depend heavily on the internet for sourcing, sharing and storing relevant information needed for research purpose.

Universities across the globe are making frantic effort to promote the collection and utilization of digital resources for research. In today's technological world, research activities can be carried out in all disciplines using available digital resources provided in the library. Researchers no longer need to depend on the use of laboratories as some of the research activities carried out in the laboratories can be conducted using available digital resources which are cost effective. This has made great contributions to the growth and development of most emerging economies as well as the developed ones. Kenchakkanavar (2014) identified the uses of e-resources to include carrying out academic and research activities. E-resources are therefore relevant for both academic and administrative activities within and outside the University.

## **2. Aim and Objectives of the Study**

The aim of the study was to examine the utilization of digital resources for 21<sup>st</sup> century research activities in public Universities in Rivers State. Specific objectives of the study included to:

- 1) determine the extent of utilizing statistical database for 21<sup>st</sup> century research activities in public Universities in Rivers State.
- 2) ascertain the extent of utilizing electronic books (e-books) for 21<sup>st</sup> century research activities in public Universities in Rivers State.

- 3) determine the extent of utilizing the internet for 21<sup>st</sup> century research activities in public Universities in Rivers State.

## **2.1 Research Questions**

The following research questions were posed in the study:

- 1) What is the extent of utilizing statistical database for 21<sup>st</sup> century research activities in public Universities in Rivers State?
- 2) What is the extent of utilizing electronic books (e-books) for 21<sup>st</sup> century research activities in public Universities in Rivers State?
- 3) What is the extent of utilizing the internet for 21<sup>st</sup> century research activities in public Universities in Rivers State?

## **2.2 Test of Hypotheses**

The following hypotheses were tested at 0.05 level of significance:

- 1) There is no significant difference between the mean ratings of male and female academic staff on the extent of utilizing statistical database for 21<sup>st</sup> century research activities in public Universities in Rivers State.
- 2) There is no significant difference between the mean ratings of male and female academic staff on the extent of utilizing electronic books (e-books) for 21<sup>st</sup> century research activities in public Universities in Rivers State.
- 3) There is no significant difference between the mean ratings of male and female academic staff on the extent of utilizing the internet for 21<sup>st</sup> century research activities in public Universities in Rivers State.

## **3. Methodology**

Design adopted for the study was descriptive survey. Population of the study comprised 2,734 academic staff in the three public Universities in Rivers State. The sample for the study was 610 comprising 325 male academic staff and 285 female academic staff who were sampled for the study through systematic random sampling technique. Taro Yamane minimum sample size determination technique was used to determine the sample size for the study. The instrument used for data collection was a questionnaire titled "Digital Resources for University Research Activities Questionnaire" (DRURAQ) with 21 questionnaire items. The questionnaire was validated by two Educational Management Experts in the Faculty of Education, University of Port Harcourt. The reliability of the questionnaire was determined using Cronbach Alpha with an index of 0.79. The research questions were answered using percentage, mean and standard deviation while the hypotheses were tested using z-test at 0.05 level of significance.

## 4. Results

### 4.1 Answer to Research Questions

**Question 1:** What is the extent of utilizing statistical database for 21<sup>st</sup> century research activities in public Universities in Rivers State?

**Table 1:** Mean and standard deviation scores of the extent of utilizing statistical database for 21<sup>st</sup> century research activities in public Universities in Rivers State

S/No	Item	Male Academic Staff (n=325)			Female Academic Staff (n=285)		
		Mean	SD	Remark	Mean	SD	Remark
1	Research data are sourced from existing statistical data base	2.57	1.05	High Extent	2.53	0.96	High Extent
2	Researchers conduct statistical analysis using statistical databases	3.01	0.81	High Extent	2.55	0.99	High Extent
3	Querying of data is carried out by researchers online	2.73	1.03	High Extent	2.21	1.01	Low Extent
4	Research findings are stored on existing statistical databases	2.11	1.01	Low Extent	2.67	1.21	High Extent
5	Staff have access rights to existing statistical data bases for research activities	2.50	0.99	High Extent	2.74	1.05	High Extent
6	Models for research activities are developed using statistical databases	2.46	0.97	Low Extent	2.69	0.95	High Extent
7	Researchers often share research data on existing statistical database	2.55	1.15	High Extent	2.47	1.06	Low Extent
<b>Grand Mean</b>		<b>2.56</b>	<b>1.00</b>	<b>High Extent</b>	<b>2.55</b>	<b>1.03</b>	<b>High Extent</b>

In Table 1, it was revealed that the responses of the male academic staff to items 1-7 were 2.57, 3.01, 2.73, 2.11, 2.50, 2.46 and 2.55. Items 1, 2, 3, 5 and 7 with mean scores of 2.57, 3.01, 2.73, 2.50 and 2.55 were above the criterion mean score of 2.50 used for decision making and depicted high extent in response to the questionnaire items while items 4 and 6 with mean scores of 2.11 and 2.46 which were below the criterion mean score of 2.50 used for decision making depicted low extent. On the part of the female academic staff, the same set of items produced mean scores of 2.53, 2.55, 2.21, 2.67, 2.74, 2.69 and 2.47. Items 1, 2, 4, 5 and 6 showed high extent while items 3 and 7 which were below the criterion mean score of 2.50 showed low extent. Summarily, the average mean scores of 2.56 and 2.55 showed that the male and female academic staff believed that there was a high extent of utilizing statistical database for 21<sup>st</sup> century research activities in public Universities in Rivers State.

**Question 2:** What is the extent of utilizing electronic books (e-books) for 21<sup>st</sup> century research activities in public Universities in Rivers State?

<b>Table 2:</b> Mean and standard deviation scores of the extent of utilizing electronic books (e-books) for 21 <sup>st</sup> century research activities in public Universities in Rivers State							
S/No	Item	Male Academic Staff (n=325)			Female Academic Staff (n=285)		
		Mean	SD	Remark	Mean	SD	Remark
8	Researchers use e-books for cross-referencing of research findings	2.63	0.98	High Extent	2.44	1.01	Low Extent
9	Research findings are published in the form of electronic books	2.30	1.02	Low Extent	2.03	1.13	Low Extent
10	Multimedia resources from e-books are often used to carry out research activities	2.63	0.91	High Extent	2.64	1.04	High Extent
11	E-books are regularly downloaded for preliminary research works	2.63	0.99	High Extent	1.78	1.16	Low Extent
12	Staff regularly access e-books from the school library for conducting research	2.52	0.92	High Extent	2.60	1.05	High Extent
13	Textual and numerical data have been accessed previously for personal research	2.76	0.92	High Extent	2.69	0.97	High Extent
14	Staff of the University subscribe regularly to useful research e-book sites	1.90	1.12	Low Extent	1.87	1.08	Low Extent
<b>Grand Mean</b>		<b>2.48</b>	<b>0.98</b>	<b>Low Extent</b>	<b>2.29</b>	<b>1.06</b>	<b>Low Extent</b>

Table 2 indicated that the mean responses of the male academic staff to items 8, 9, 10, 11, 12, 13 and 14 were 2.63, 2.30, 2.63, 2.63, 2.52, 2.76 and 1.90. Items 8, 10, 11, 12 and 13 with mean scores of 2.63, 2.63, 2.63, 2.52 and 2.76 which was above the criterion mean score of 2.50 used for decision making implied high extent while the female academic staff responded to the same set of items with mean scores of 2.44, 2.03, 2.64, 1.78, 2.60, 2.69 and 1.87. Items 10, 12 and 13 were above the criterion mean score of 2.50 and implied a high extent in respect to the questionnaire items. Every other item from the respondents had mean scores below the criterion mean score of 2.50 used for decision making and implied a low extent in respect to the questionnaire items. The average mean scores of 2.48 from the male academic staff and 2.29 from the female academic staff showed summarily that they both have the opinion that there is a low extent of utilizing electronic books (e-books) for 21<sup>st</sup> century research activities in public Universities in Rivers State.

**Question 3:** What is the extent of utilizing the internet for 21<sup>st</sup> century research activities in public Universities in Rivers State?

**Table 3:** Mean and standard deviation scores of the extent of utilizing the internet for 21<sup>st</sup> century research activities in public Universities in Rivers State

S/No	Item	Male Academic Staff (n=325)			Female Academic Staff (n=285)		
		Mean	SD	Remark	Mean	SD	Remark
15	Modern research skills are acquired from internet sources	2.49	1.03	Low Extent	1.88	1.23	Low Extent
16	The internet is used to enlighten the public on research findings	2.61	1.01	High Extent	2.63	1.02	High Extent
17	Researchers use the internet to connect with members of the industry	2.66	0.97	High Extent	2.69	0.78	High Extent
18	Researchers engage in technical discussion sessions using the internet	2.77	0.87	High Extent	2.75	0.81	High Extent
19	I make use of personal resources for carrying out assigned duties	2.55	1.04	High Extent	2.50	1.07	High Extent
20	The internet is used to secure information gathered from research activities	2.42	1.08	Low Extent	2.06	1.04	Low Extent
21	Research seminars and other training programmes are given to the public using the internet	2.78	0.85	High Extent	2.68	0.89	High Extent
<b>Grand Mean</b>		<b>2.61</b>	<b>0.98</b>	<b>High Extent</b>	<b>2.46</b>	<b>0.97</b>	<b>Low Extent</b>

In Table 3, it was observed that the mean scores of the male academic staff to items 15, 16, 17, 18, 19, 20 and 21 produced mean scores of 2.49, 2.61, 2.66, 2.77, 2.55, 2.42 and 2.78. However, the mean scores of the male academic staff on items 16, 17, 18, 19 and 21 which were 2.61, 2.66, 2.77, 2.55 and 2.78 were above the criterion mean score of 2.50 and depicted a high extent in response to the questionnaire items raised while items 15 and 20 with mean scores of 2.49 and 2.42 were below the criterion mean score and depicted a low extent. The responses of the female academic staff to the same set of items produced mean scores of 1.88, 2.63, 2.69, 2.75, 2.50, 2.06 and 2.68. Items above the criterion mean score showed a high extent while items below the criterion mean score implied a low extent in respect to the questionnaire items. In summary, the average mean scores of 2.61 and 2.46 implied that the male academic staff and female academic staff believed to a high extent and a low extent respectively on the extent of utilizing the internet for 21<sup>st</sup> century research activities in public Universities in Rivers State.

## 4.2 Test of Hypotheses

**Hypothesis One:** There is no significant difference between the mean ratings of male and female academic staff on the extent of utilizing statistical database for 21<sup>st</sup> century research activities in public Universities in Rivers State.

**Table 5:** z-test of no significant difference between the mean ratings of male and female academic staff on the extent of utilizing statistical database for 21<sup>st</sup> century research activities in public Universities in Rivers State

Variable	n	df	Mean	SD	z-cal.	z-crit.	Level of Significance	Remark
Male Academic Staff	325	608	2.56	1.00	0.12	1.96	0.05	H <sub>0</sub> was not rejected
Female Academic Staff	285		2.55	1.03				

Table 4 indicated that the value of z-cal. of 0.12 was less than the value of z-crit. of 1.96. For this reason, the null hypothesis was not rejected indicating that there was no significant difference between the mean ratings of male and female academic staff on the extent of utilizing statistical database for 21<sup>st</sup> century research activities in public Universities in Rivers State.

**Hypothesis Two:** There is no significant difference between the mean ratings of male and female academic staff on the extent of utilizing electronic books (e-books) for 21<sup>st</sup> century research activities in public Universities in Rivers State.

**Table 6:** z-test of no significant difference between the mean ratings of male and female academic staff on the extent of utilizing electronic books (e-books) for 21<sup>st</sup> century research activities in public Universities in Rivers State

Variable	n	df	Mean	SD	z-cal.	z-crit.	Level of Significance	Remark
Male Academic Staff	325	608	2.48	0.98	2.29	1.96	0.05	H <sub>0</sub> was rejected
Female Academic Staff	285		2.29	1.06				

In Table 5, the value of z-crit. of 1.96 at a degree of freedom of 608 and a 0.05 level of significance was less than the value of z-cal. of 2.29. Therefore, the null hypothesis was rejected revealing that there was a significant difference between the mean ratings of male and female academic staff on the extent of utilizing electronic books (e-books) for 21<sup>st</sup> century research activities in public Universities in Rivers State.

**Hypothesis Three:** There is no significant difference between the mean ratings of male and female academic staff on the extent of utilizing the internet for 21<sup>st</sup> century research activities in public Universities in Rivers State.

**Table 7:** z-test of no significant difference between the mean ratings of male and female academic staff on the extent of utilizing the internet for 21<sup>st</sup> century research activities in public Universities in Rivers State

Variable	n	df	Mean	SD	z-cal.	z-crit.	Level of Significance	Remark
Male Academic Staff	325	608	2.61	0.98	1.90	1.96	0.05	H <sub>0</sub> was not rejected
Female Academic Staff	285		2.46	0.97				



Table 6 showed that the value of z-cal. of 1.90 was below the value of z-crit. of 1.96 at 0.05 level of significance and 608 degree of freedom. Therefore, the null hypothesis was not rejected showing that there was no significant difference between the mean ratings of male and female academic staff on the extent of utilizing the internet for 21<sup>st</sup> century research activities in public Universities in Rivers State.

## **5. Discussion of Findings**

### **5.1 Extent of Utilizing Statistical Database for 21<sup>st</sup>Century Research Activities in Public Universities in Rivers State**

Statistical databases are relevant for carrying out statistical analytical activities which is significant for developing research findings needed for proffering solutions to societal problems. The respondents used for the study pointed out that there is a high extent to which statistical databases are used for analytical work as well as accessing relevant research data. Stating the importance of this task, Wu and Rusu (2019) reported that those who use available statistical data bases are able to cover larger research activities requiring data organization and analysis. This forms part of the advantage that most academic staff derives from using statistical databases for research activities.

However, the respondents have diverse opinion of the use of statistical databases to develop statistical models that are used for developing research patterns for solving common research problems. Furthermore, the failure to utilize statistical databases for research activities may be better understood from the findings of the study carried out by Shephard, Stapley and Hamilton (2011) which showed that the problem of coding is what limits the use of statistical database for research. The inability to code data collected from statistical databases available to academic researchers may explain why they fail to use this vital source of information for developing models needed to solve research problems.

In addition to the above, the respondents had divergent views on the sharing of statistical data across statistical databases. The inability to do so may be understood from the point view of Tezer and Yıldız (2017) who reported that the use of technology in most public Universities was intermittently. This situation may be responsible for why academic researchers find it difficult to share research data across existing statistical databases which will be important for the achievement of University goals and objectives.

### **5.2 Extent of Utilizing Electronic Books (E-Books) for 21<sup>st</sup>Century Research Activities in Public Universities in Rivers State**

There are various sources through which researchers can access data for research activities in the University. However, the growth in technology has made it easy for staff of different Universities to access important information through electronic books known as e-books. Electronic books exist across different disciplines and are useful for research activities across different areas of study. However, the findings of the study suggest that academic researchers are yet to fully embrace e-books for research activities. This is

evident in the findings of the study which showed that most of the staff of the Universities were not subscribed to e-books especially in their areas of specialization for research activities. This finding contradicts the finding of the study conducted by Rafiq and Warraich (2016) which showed that both teachers and students use e-book for academic and research activities. This suggests the need for researchers in the study area to subscribe to free and paid e-books as this will help to promote competence in academic and research activities.

According to the study carried out by Rabiou, Ojukwu and Oladele (2016), respondents of the study reported that they accessed both paid for and free e-books for research purposes. Researchers in public Universities should therefore be supported to access some of these electronic books as it will aid their research activities in the long run. Furthermore, it was revealed from the findings of the study that male academics downloaded more e-books than female academics. There is therefore need for the University as well as the government to provide an enabling environment both financially and through appropriate policies to access electronic books in their field of study as this will assist in the execution of useful research activities for societal growth and development.

### **5.3 Extent of Utilizing the Internet for 21<sup>st</sup> Century Research Activities in Public Universities in Rivers State**

The growth of the internet is contributing to quality service delivery across different sectors of the economy including the education sector. However, despite the growth in the provision of internet services, very little achievements have been recorded across all fields of life in the use of the internet for quality service delivery. This includes the differences that exist among academics as regards the extent to which the internet has been embraced for research activities among academics especially in public Universities. Hussaini, Abdulrahim, Wusa, Jimoh and Musa (2014) pointed out that internet services has a positive influence on access to information needed for research and academic activities. However, the respondents of the study agreed that there is a low extent of development of internet skills among male and female academics in public Universities in Rivers State. This shows that academics have not fully utilized the advantages derivable from the use of the internet especially for research purposes.

The respondents noted that they often use their personal resources so as to be able to access internet services for research activities. This shows that the government as well as University administrators have done very little in the provision of internet services for research purposes. Milková and Ambrožová (2018) asserted in the findings of their study that the internet makes it easy for researchers to cheat in research activities. However, this does not mean that these institutions should not provide these essential services to academics as this service has more advantages to researchers than the disadvantages that come with the internet. It was also pointed out by the respondents of the study that the internet is often used for research discussion sessions. This may explain why Khan (2012) revealed in his study that technology was used in and outside the classroom. He also

posited that the use of cellphone declined for other devices such as iPads and laptops. This suggests that researchers have continued to search for other means of carrying out their research duties using the internet both within and outside the University. However, the male and female academics differ in their use of internet for research activities. The male academics tend to use the internet for research activities more than the female academics. This difference may be attributed to the ease of accessing this service within and outside the University as well as opportunity to serve in different administrative capacities which increases the technological competence of these male academics. The University therefore needs to do a lot to balance the difference in the use of internet among the male and female academics for research activities in these Universities.

## 6. Conclusion

Based on the findings of the study, it was concluded that:

- 1) There was no significant difference between the mean opinion scores of male and female academic staff on the extent of utilization of statistical database and internet facilities for research activities while a difference existed in the use of e-books in the three public Universities in Rivers State.
- 2) Digital resources are often utilized by male and female academic staff in public Universities in Rivers State for research activities in the sampled institutions.

### 6.1 Recommendations

The following recommendations were made based on the findings of the study:

- 1) Public Universities in Rivers State should develop statistical databases in the different disciplines of study where researchers can utilize statistical data collected in the database for future research activities.
- 2) The government in collaboration with University administrators should provide regular stipend to academic staff of public Universities which can be used to subscribe to important e-book sites which will help promote research activities among staff of public Universities.
- 3) Internet services should be provided in all public Universities down to the departmental level which will provide convenience for research activities among staff of these Universities for personal and societal growth and development.

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